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Operator Unit for an X-Ray Examining Apparatus

BACKGROUND OF THE INVENTION

FIELD OF THE INVENTION

The present invention relates to an operator unit for an X-ray examining apparatus of a type including an operating field for operation of an operating system of the X-Ray examining apparatus and a monitor for displaying an X-Ray image for an operator. ~~according to the preamble of claim 1.~~

RELATED ART

German Patent 199 10 615 C1 discloses an operator terminal for an X-ray examining apparatus. It is known that such an X-ray examining apparatus is used by multiple operators at regular or irregular intervals.

To identify an individual operator, a digital code is entered via an operator panel into the operating system, which is assigned individually to the respective operator. One disadvantage of this type of input is that different operators can log onto the operating system using the same digital code without the operating system detecting the difference, so that individual statistical data acquisition for each operator could be falsified.

This leads to the object of the present, namely to allow unique identification of an operator in the operating system.

~~This object is achieved through the features of claim 1.~~

SUMMARY OF THE INVENTION

The present invention is based on the idea of incorporating a unique identification system into an X-ray examining apparatus or system such that each operator can log onto the operating system only with his or her own individual identification means. This identification means is read by a counterpart device of the identification system and if necessary rewritten. For example, the operating system can be cleared for access by another operator by this process. When leaving the operating system, the operator is logged off and the operating system is made accessible for another operator upon removal of the identification means or upon leaving a defined local area around the X-ray examining apparatus. The operating system thus remains ready for operation, preferably only with the help of a functional identification means.

The identification mean may be a means requiring contact, such as a chip card, a magnetic card or the like, in which case the counterpart device of the identification system would be a card reader. In the case of an identification system that operates without contact, e.g., by means of electromagnetic radiation, the identification means is a small transceiver unit or a transponder. The

respective counterpart device is therefore adapted to operate with the specific type of identification means used. A contacting or non-contacting identification means, which operates according to inductive principles may also be implemented.

In another advantageous embodiment of the present invention, the identification means is writable. Due to the writability of the identification device, individual statistics and data recorded in, for example, training sessions or in actual practice may be stored. In addition, each operator can program individual instrument settings, such as keyboard management, into his or her identification means, so that an operator can set priority functions on freely allocable keys in an operating field in accordance with individual preference.

Instrument parameters that have been individualized for each operator can also be stored on the identification means. These parameters might include, for example, the brightness of a display screen, color scaling and/or gray scale display properties or ergonomic data.

The counterpart device for the individual identification means is preferably integrated into the operating field.

To prevent the individual identification means from inadvertently remaining in the operating system when the operator leaves the local area or the X-ray examining apparatus itself, the identification means may be attached to the operator mechanically, e.g., by a chain. For example, in the case of a non-contact identification means, a local area would be defined such that the operator would have to remain within this local area for the operating system to remain active. An operator leaving this area would then be automatically logged off the operating system, which would thereby be cleared for use by another operator. In particular, the operating system would go into a stand-by mode.

In addition, the identification means may also be used as an access card for other objects, installations, company areas and the like.

Providing external storage of statistics or personal data on the identification means provides the advantage that the data would remain available in the event of or in spite of a failure of the X-ray examining apparatus. Furthermore, such data may be recorded on multiple items of equipment and stored centrally by way of the identification means.

BRIEF DESCRIPTION OF THE DRAWINGS

The present invention will now be described in greater detail by way of

reference to the attached drawings, which illustrate:

Figure 1 a monitor and an operating field as the operator unit of an X-ray examining apparatus;

Figure 2 an operative area of a smart card that functions without contact, shown in plan view.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Figure 1 illustrates a monitor 1 of an X-ray examining apparatus, which is not shown in further detail. An operating field 2, with which an operating system is controlled and by which the X-ray examining apparatus is operated, is connected to the monitor 1 and the operating system of the X-ray examining apparatus. A unique identification of an operator 6 is made by way of an identification system including an identification means 4 and a counterpart device 3. The counterpart device 3 is preferably integrated with the operating field 2. The identification means 4 in this case is a contacting card, which can be inserted into the counterpart device 3 that is shown as a card reader. The card reader 3 can read the contacting card 4, and in another advantageous embodiment, it can also write to the card. The identification means 4 here is preferably connected

mechanically to the operator 6 by a chain-like connection 5.

When a contacting identification means 4 is introduced into the card reader 3, the operating system of the X-ray examining apparatus, which was previously in a non-activated state, i.e., in stand-by mode, is initiated. At the same time, for example, the operating field 2 may be cleared for operation of keys 2.1. Upon removal of identification means 4 from card reader 3, the operating system is deactivated and returns to stand-by mode. This may be accomplished automatically or by having the operator 6 log off manually. The operating system and thus the X-ray examining apparatus remain in ready mode only as long as the identification means 4 remains in the card reader 3.

Figure 2 illustrates another variant of the present invention, where the identification system operates without contact, e.g., by wireless radio link or by infrared radiation. A counterpart device 3.1 here is connected electrically to a transceiver unit as an identification means 4.1, so the transceiver 4.1 can be read by and is preferably also writable by the counterpart device 3.1. The operating readiness of the operating system is guaranteed in a local area N that is defined in advance. When operator 6 leaves local area N, the operator 6 is automatically logged off.

However, it is also possible for an operator 6 to disconnect manually. To prevent an unintentional disconnect, a so-called time safety interval Δt may be incorporated, so that a shutdown takes place only after the interval has been exceeded. Such a protective circuit may also be incorporated into both embodiments.

In an advantageous manner, the operator 6 may also use the identification means 4, 4.1 to assign commands/functions predetermined individually by the operator 6 to freely allocable keys 2.1. Thus, the operator 6 is given an opportunity to independently adjust frequently used functions, such as switching from a color display to a gray scale display, or changing the operational characteristics of the system for use by a left-handed operator. This allocation of functions to keys 2.1 takes place automatically when identification means 4 or 4.1 logs on to the operating system. However, the identification device could also be programmed with authorizations for the operating system of the X-ray examining apparatus. Instrument settings such as the monitor height or the seat position of an ergonomic operator terminal can also be stored in the identification means 4, 4.1. In addition, identification means 4, 4.1 can also be used as an access card for certain installations or areas of a company.

It is self-evident that modifications are also possible within the scope of the present invention. For example, the counterpart device 3, 3.1 of the identification system may also be installed physically in the X-ray examining apparatus.

To prevent unauthorized operators from using an external identification means 4, 4.1, additional security measures may also be provided, including in addition to a secret PIN, identification by means of a so-called live scanner (fingerprinter) 20 or a similar device, as indicated in Figure 1.